

CLAIMS

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1 1. A roof structure comprising:
2 (22)
3 a support web;
4 (24)
5 an exposure surface perpendicularly bisecting the
6 support web;
7 (50)
8 a collector perpendicularly bisecting the support web
opposite the exposure surface, wherein the collector has flanges projecting
outward in opposing lateral directions, each flange having a distal edge
upwardly extending from the flange.

1 2. The roof structure of claim 1, wherein the exposure surface and
2 the collector are integral with the support web to eliminate the necessity for
3 parts inventory.

1 3. The roof structure of claim 2, wherein the distal edge upwardly
2 extends from each flange at an angle of about 90 to 175 degrees.

1 4. The roof structure of claim 2, wherein the distal edge upwardly
2 extends from each flange at an angle of about 125 to 145 degrees.

1 5. The roof structure of claim 2, wherein the exposure surface has
2 a negative angle to the support web.

1 6. The roof structure of claim 2, wherein the collector has a depth
2 greater than the maximum expected deflection of the roof support.

1 7. The roof structure of claim 2, wherein the distal edge is general
2 parallel to the support web.

1 8. The roof structure of claim 2, wherein the roof structure is
2 manufactured by a pultrusion process, extrusion process, weldment process,
3 rollform process, or a combination thereof.

1 9. A roof panel and roof structure combination comprising:
2 (14)
3 at least one roof panel including;

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3 an exterior surface; and
4 an interior surface; and
5 a roof structure including:
6 an exposure surface;
7 a collector including opposing lateral distal edges
8 that upwardly extend from the collector; and
9 a support web integral with and perpendicularly
10 bisecting the exposure surface and the collector, wherein the exposure
11 surface is opposite the collector; and
12 wherein the roof panel is closely adjacent to the support
13 web, and the distal edges of the collector supports the roof panel.

1 (1b) 10. The combination of claim 9, wherein the roof panel includes a
2 drip edge extending longitudinally along the interior surface of the roof panel.

1 11. The combination of claim 10, wherein the drip edge extends
2 parallel with the longitudinal axis of the roof support.

1 12. The combination of claim 9, wherein a first roof panel and a
2 second roof panel abut opposing sides of the support web, and the exposure
3 surface of the roof support overlaps the exterior surface of both the first
4 panel and the second panel.

1 13. The combination of claim 9, wherein the exposure surface of
2 the roof support includes flanges projecting outward in opposing lateral
3 directions.

1 14. The combination of claim 13, wherein the exterior surface of
2 the roof panel includes an arcuate projection and at least one flange of the
3 exposure surface of the roof support includes an arcuate channel, the arcuate
4 channel being configured to interface with the arcuate projection of the roof
5 panel.

1 15. The combination of claim 14, wherein the arcuate channel
2 extends parallel to the longitudinal axis of the roof support.

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1 16. The combination of claim 9, wherein the roof structure has a
2 modulus of elasticity of at least about 2,500,000 pounds per square inch.

1 17. The combination of claim 9, wherein the opposing lateral distal
2 edges of the collector upwardly extend at an angle from the collector of
3 about 90 to 175 degrees.

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1 18. A method of making a roof support comprising:
2 introducing fibers to a resin bath to form a fiber-resin
3 combination;
4 contouring the fiber-resin combination in the shape of a
5 roof support; and
6 curing the resin-fiber combination.

1 19. The method of claim 18, wherein the fibers are selected from a
2 group consisting of at least glass, graphite, polyethylene, polyvinyl and a
3 combination of the same.

1 20. The method of claim 18, wherein the resin includes an epoxy
2 resin.

1 21. The method of claim 18, wherein the fiber-resin combination is
2 contoured in the shape of a roof support including:

3 a support web;
4 an exposure surface perpendicularly bisecting the
5 support web;
6 a collector perpendicularly bisecting the support web
7 opposite the exposure surface, wherein the collector has flanges projecting
8 outward in opposing lateral directions, each flange having a distal edge
9 parallel to the support web and upwardly extending from the flange.

1 22. The method of claim 18, further comprising cutting the cured
2 fiber-resin combination.

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1 23. The method of claim 18, wherein the roof support has a
2 moment of inertia of about 3.180 inches⁴.

1 24. The method of claim 18, wherein the fiber-resin combination is
2 in the shape of a roof support including a support web having a top surface
3 and a bottom surface, wherein the top surface is configured to be closely
4 adjacent to an interior surface of a roof panel.

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